

**REMARKS**

Reexamination and further and favorable reconsideration of the subject application in light of the following remarks, pursuant to and consistent with 37 C.F.R. § 1.112, are respectfully requested.

Claims 1-4 are pending in this application. Claims 3-4 have been indicated as allowable but for dependence upon a rejected base claim.

**Rejection Under 35 U.S.C. § 103**

Claims 1-2 stand rejected under 35 U.S.C. § 103 as allegedly unpatentable over U.S. Patent Application Publication No. 2003/0116196 (Sasao) in view of JP 05099354 (Yoshifumi). The rejection is traversed.

The prior art fails to establish a proper prima facie case of obviousness. To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. § 2143.

Claim 1 recites: "A constant flow valve, comprising a body unit formed by a inlet channel and outlet channel for fluid and a chamber communicating with the inlet channel and outlet channel, and a valve member provided in said chamber and having a valve body and a first diaphragm, wherein said constant flow valve further comprises a second diaphragm and third diaphragm positioned at the two sides of said valve member in said chamber and having effective pressure receiving areas smaller than the first diaphragm, said valve member and

said diaphragms being mounted in said chamber by the diaphragms being fixed to said body unit at the circumferences thereof, said chamber being divided into a first pressure chamber formed between one end of said chamber and said second diaphragm, a second pressure chamber formed between the other end of said chamber and said third diaphragm, a first valve chamber formed between said first diaphragm and said third diaphragm, and a second valve chamber formed between said first diaphragm and said second diaphragm, said first pressure chamber having means for applying a constant inward force to said second diaphragm at all times, said first valve chamber communicating with said inlet channel, said second valve chamber having a valve seat cooperating with said valve body of said valve member, said second valve chamber being divided into a bottom second valve chamber positioned at the first diaphragm side with respect to said valve seat and communicating with said first valve chamber through a communication hole formed in said first diaphragm and a top second valve chamber positioned at said second diaphragm side and communicating with said outlet channel, the space between said valve body and said valve seat forming a fluid control part using displacement of said valve member with respect to said valve seat to change the opening area between said valve body and said valve seat to control the fluid pressure of said bottom second valve chamber, said second pressure chamber having means for applying a constant inward force to said third diaphragm at all times.”

The valve according to the present invention includes the body unit formed by the inlet channel and outlet channel for fluid and the chamber communicating with the inlet channel and outlet channel; the valve member provided in the chamber and having the valve body and the first diaphragm; and the second diaphragm and third diaphragm positioned at the two sides of the valve member in the chamber and having effective pressure receiving areas smaller than the first diaphragm.

Further, the chamber is divided into the first pressure chamber formed between one end of the chamber and the second diaphragm, the second pressure chamber formed between the other end of the chamber and the third diaphragm, the first valve chamber formed between the first diaphragm and the third diaphragm, and the second valve chamber formed between the first diaphragm and the second diaphragm, and the first pressure chamber has means for applying a constant inward force to the second diaphragm at all times.

Additionally, the first valve chamber communicates with the inlet channel, and the second valve chamber has the valve seat cooperating with the valve body of the valve member and is divided into the bottom second valve chamber positioned at the first diaphragm side with respect to the valve seat and communicating with the first valve chamber through the communication hole formed in the first diaphragm and the top second valve chamber positioned at the second diaphragm side and communicating with the outlet channel.

In the present invention, the valve body of the valve member is provided in the second valve chamber communicating with the outlet channel, and the force acting on the second diaphragm can be substantially ignored compared with the force acting on the first diaphragm. See, *e.g.*, SPECIFICATION at 9, l. 32 - 11, l. 16. As a result, the flow rate of the fluid flowing through the valve is determined by the pressure difference before and after the communication hole, and the difference of fluid pressure in the first valve chamber and the bottom second valve chamber becomes constant, even if the fluid pressure on the outlet side of the valve changes and therefore the fluid pressure in the top second valve chamber changes. Thus, even if the fluid pressure on the outlet side of the valve changes, the flow rate of the fluid flowing through the valve can be held constant at all times. This is particularly effective to achieve a constant flow valve required to precisely control fluid pressure on an outlet side of the valve.

The references fail to teach or suggest every element of the presently claimed invention. The Office has asserted that U.S. 2003/0116196 (Sasao) discloses a constant flow valve which has a first diaphragm 42 holding a valve member 31 and held at either end by a second 43 and third diaphragm 41 . However, a second valve chamber formed between first diaphragm 42 and second diaphragm 43 does not have a valve seat cooperating with a valve body of valve member 31 and is not divided into a bottom second valve chamber and a top second valve chamber. That is, Sasao does not disclose a feature of the present invention wherein the constant valve includes a bottom second valve chamber positioned at the first diaphragm side with respect to the valve seat and communicating with the first valve chamber through a communication hole formed in the first diaphragm. Therefore, in the constant flow valve disclosed in Sasao, if the fluid pressure on the outlet side of the valve changes, pressure in a chamber 24 having an outlet port 14 changes and diaphragm 42 and the valve body of the valve member 31 are instantaneously moved, thereby instantaneously changing the flow rate flowing through the valve.

JP05099354 (Yosifumi) also fails to disclose the above feature of the present invention, and cannot cure the defects in Sasao. Consequently, the prior art fails to make out a prima facie case of obviousness.

For at least the foregoing reasons, withdrawal of the rejection is respectfully requested.

**CONCLUSION**

In view of the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order. Such action is earnestly solicited.

In the event that there are any questions relating to this Amendment and reply, or the application in general, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

The Director is hereby authorized to charge any appropriate fees that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

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